AI BASED INTELLIGENT CONTROL SYSTEM CNN

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Abstract –
The safety of automobiles and pedestrians has long been ensured by road traffic control. However, rescue vehicles and ambulances are backed up in traffic, making it difficult to save people who are inside the car.amidst the busy traffic. There is no mechanism that can instantly identify and categorise emergency vehicles in the flow of traffic. The following paper suggests using road photos to train a machine learning model for detecting and categorising emergency vehicles on the road in order to address this problem. The Convolutional Neural
Network (CNN)

Keywords:CNN,ITS,etc.

I-INTRODUCTION:

Nowadays, one of the most significant and well-liked growing fields is machine learning (ML), which is a subset of artificial intelligence (AI). Machine learning has recently emerged as a crucial and promising study field in transportation engineering, particularly in the area of traffic forecasting. The nation's economy is impacted by traffic congestion either directly or indirectly. In addition to costing individuals daily fuel and valuable time, traffic congestion. For the sake of the people's ability to live their lives without annoyance or strain, a small-scale traffic prediction is necessary since traffic congestion is a significant issue that affects all social classes in society.

The comfort of road users is first and foremost necessary for ensuring the nation's economic progress. And due to the traffic situation, emergency vehicles have the greatest challenges in saving lives. Only when traffic is moving smoothly is this possible. Emergency vehicle and traffic prediction is required to address this, allowing us to estimate or predict the traffic in the future to a certain extent. the economy of the nation as well. Additionally, in order to address these problems, the government is funding ITS.
This research paper's main goal is to identify various machine learning techniques and speculate on models using Python 3. Predicting traffic movement is the aim of this technique the quickest possible delivery of the ambulance and traffic to the users. This research can therefore be useful for traffic forecasting. In this study, I utilised a
Python programme running in a command prompt window instead of the standard Anaconda software, which is significantly simpler than the typical method of detecting traffic and emergency vehicles like ambulances.

II. PROPOSED SYSTEM:

This approach shows a substantial Images of moving automobiles were categorised into four categories using CNN, including Low, Medium, High, and No Traffic. They demonstrate that cutting-edge outcomes are obtained when deep CNNs are used for traffic type classification.A number of feature extraction phases (hidden layers) that may automatically learn representations from the data are used by CNN, which is currently the best and most powerful image processing method. The research on CNNs has intensified due to the growth in a vast amount of dataset, and recently some extremely inspirational deep CNN designs have been described. Convolutional Neural Network (CNN) models demonstrate high generalisation to the test dataset and learn how to map input images to their labelled classes. The suggested CNN technique has demonstrated successful traffic detection in experiments using real-world datasets, and it can complete the task with high accuracy for four target traffic classes.

III- BLOCK DIAGRAM

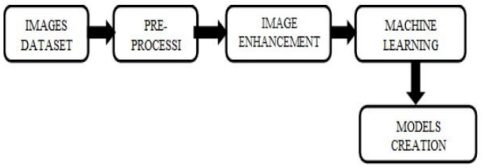


Fig 1Model creation

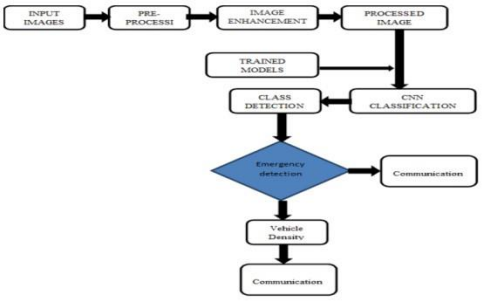


Fig 2 Emergency detection

IV.SOFTWARE TESTING:

Designing test cases for unit testingensures that the core programme logic is working correctly and that programme inputs result inlegitimate outputs. It is important to verify the internal code flow and all decision branches. It is the testing of the application's separate software components. Before integration, it is done following the completion of each individual unit. This is an invasive structural test that depends on understanding how it was built.Unit tests carry out fundamental tests at the component level and examine a particular configuration of a system, application, or business process. Unit tests make assurance that each distinct path of a business process adheres precisely to the stated specifications and has inputs and outputs that are well-defined

V- INTEGRATION TESTING:

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise A from the combination of components.

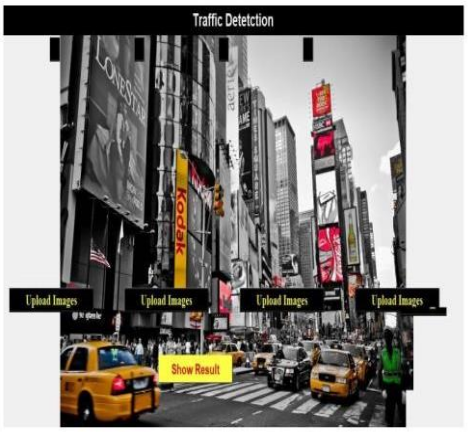
VI- UNCTIONAL TEST :

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals. Functional testing is centered on the following items: Valid Input : identified classes of valid input must be accepted. Invalid Input : identified classes of invalid input must be rejected. Functions : identified functions must be exercised. Output : identified classes of application outputs must be exercised.

VI. ECONOMICAL FEASIBILITY:

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased

VII. SIMULATION OUTPUT:



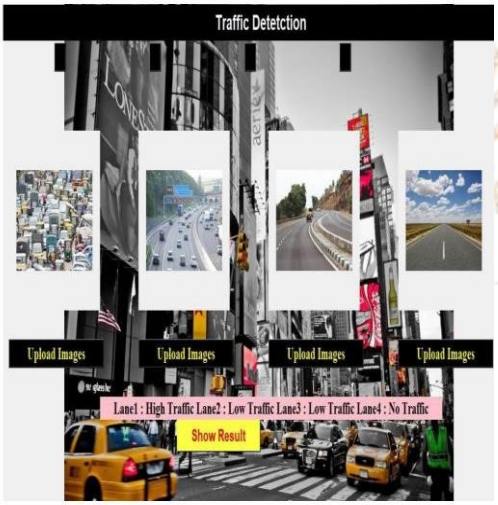


Fig 3 Traffic detection

VIII. CONCLUSION:

In this study, we used transfer learning to develop a CNN model for automatic Traffic detection using Road images. Transfer learning uses weights from networks previously trained on millions of data. The proposed study implements four different transfer learning models with different optimizers (ADAM, SGD, RMSprop), and extensive experiments were performed on the datasets with the largest number of Road images currently available. For this models, the features are extracted using transfer learning, and three dense layers along with the softmax layer are used for classification purposes. The proposed deep TL models shows fast learning by using the Adam optimizer and the dropout method avoids the problem of over fitting. In future work, the performance of the system can still be improved by using larger data sets and using other deep learning techniques.

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